

# Product Preview

## 1:4 ÷1/÷2 ECL/PECL Clock Fanout Buffer

The MC100LVEL37 is a fully differential 1:4 fanout buffer. The device offers two outputs at +1 of the input frequency, and two outputs at +2 of the input frequency. The Low Output–Output Skew of the device makes it ideal for distributing 1x and 1/2x frequency synchronous signals.

The differential inputs have special circuitry which ensures device stability under open input conditions. When both differential inputs are left open the D input will pull down to V<sub>EE</sub>, The D input will bias around V<sub>CC</sub>/2 and the Q output will go LOW.

- Differential Inputs and Outputs
- 20–Lead SOIC Packaging
- 700ps Typical Propagation Delays
- 50ps Output–Output Skews
- Low Voltage 100K ECL
- >2000V ESD Protection

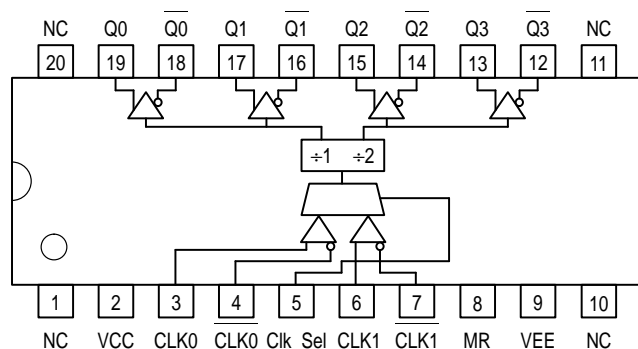
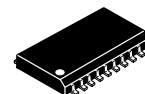


Figure 1. 20–Lead Pinout (Top View)

# MC100LVEL37



**DW SUFFIX**  
20–LEAD PLASTIC SOIC WIDE PACKAGE  
CASE 751D–04

### PIN NAMES

Pins	Function
Q <sub>n</sub> , Q <sub>n</sub>	Differential Clock Outputs
CLK <sub>n</sub> , CLK <sub>n</sub>	Differential Clock Inputs
Clk_Sel	Input Clock Selection '0' Selects CLK0; '1' Selects CLK1
MR	Asynchronous Master Reset '1' Resets Dividers

### MC100LVEL37 DC CHARACTERISTICS (V<sub>EE</sub> = –3.0V to –3.8V; V<sub>CC</sub> = GND)

Symbol	Characteristic	–40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I <sub>EE</sub>	Power Supply Current		38			38			38			38		mA
I <sub>IH</sub>	Input HIGH Current			150			150			150			150	μA
I <sub>INL</sub>	Input LOW Current	CLK <sub>n</sub> CLK <sub>n</sub>	0.5 –300		0.5 –300			0.5 –300			0.5 –300			μA

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.



# MC100LVEL37

## MC100LVEL37

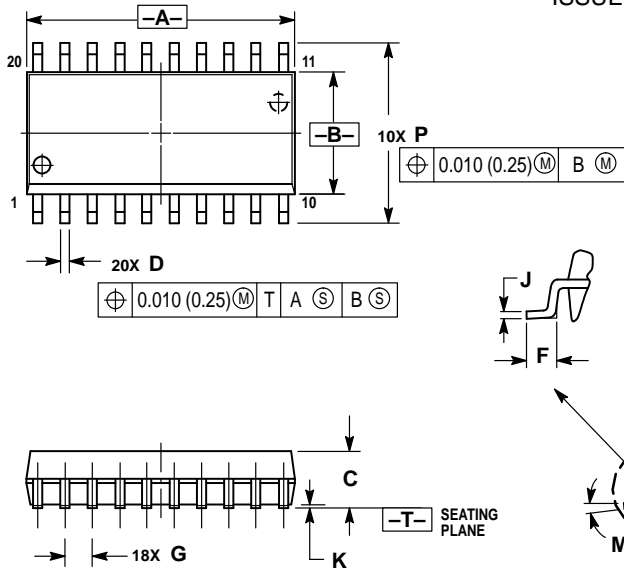
### AC CHARACTERISTICS ( $V_{EE} = -3.0V$ to $-3.8V$ ; $V_{CC} = GND$ )

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay — CLK→Q/Q Clk_Sel→Q MR→Q		700 800 800			700 800 800			700 800 800			700 800 800		ps
t <sub>sk(O)</sub>	Output–Output Skew			50			50			50			50	ps
t <sub>sk(DC)</sub>	Duty Cycle Skew  t <sub>PLH</sub> –t <sub>PHL</sub>			50			50			50			50	ps
V <sub>PP</sub>	Minimum Input Swing (Note 1.)	150		1000	150		1000	150		1000	150		1000	mV
V <sub>CMR</sub>	Common Mode Range (Note 2.) V <sub>PP</sub> < 500mV V <sub>PP</sub> ≥ 500mV	-2.0 -1.8		-0.4 -0.4	-2.1 -1.9		-0.4 -0.4	-2.1 -1.9		-0.4 -0.4	-2.1 -1.9		-0.4 -0.4	V
t <sub>r</sub> t <sub>f</sub>	Output Rise/Fall Times Q (20% – 80%)	230		500	230		500	230		500	230		500	ps

1. Minimum input swing for which AC parameters guaranteed. The device has a DC gain of ≈40.
2. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V<sub>ppmin</sub> and 1V. The lower end of the CMR range varies 1:1 with V<sub>EE</sub>. The numbers in the spec table assume a nominal V<sub>EE</sub> = -3.3V. Note for PECL operation, the V<sub>CMR(min)</sub> will be fixed at 3.3V – |V<sub>CMR(min)</sub>|.

OUTLINE DIMENSIONS

DW SUFFIX  
PLASTIC SOIC WIDE PACKAGE  
CASE 751D-04  
ISSUE E



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.150 (0.006) PER SIDE.
  5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.13 (0.005) TOTAL IN EXCESS OF D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.65	12.95	0.499	0.510
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC		0.050 BSC	
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0° - 7°		0° - 7°	
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution; P.O. Box 5405, Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.: SPD, Strategic Planning Office, 4-32-1, Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan. 81-3-5487-8488

Mfax™: RMFAX0@email.sps.mot.com - TOUCHTONE 602-244-6609  
- US & Canada ONLY 1-800-774-1848

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park, 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

INTERNET: <http://motorola.com/sps>

